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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, LUONG TRUNG

ART UNIT

PAPER NUMBER

2622

MAIL DATE

DELIVERY MODE

11/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/799,156	PATTERSON, RICHARD H.	
	Examiner	Art Unit	
	LUONG T. NGUYEN	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

1. Figures 1A-1B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1-19 are objected to because of the following informalities

Claim 1 (line 1), "comprising;" should be changed to --comprising--;

Claim 1 (line 2), "a. A lens" should be changed to --a/ a lens--;

Claim 1 (line 3), "b. A means" should be changed to --b/ a means--;

Claim 1 (line 5), "c. An optical sensor" should be changed to --c/ an optical sensor--;

Claim 1 (lines 8, 11, 12), claim 7 (lines 2-3), claim 8 (lines 2-3), claim 9 (lines 2-3), claim 10 (lines 2-3), "said data sets" should be changed to --said at least two data sets--;

Claim 1 (line 11), "d. A processing means" should be changed to --d/ a processing means--;

Claim 1 (line 14), "e. a monitor" should be changed to --e/ a monitor--;

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Claim 11 (line 3), "a. separating" should be changed to --a/ separating--;

Claim 11 (line 7), "b. processing" should be changed to --b/ processing--;

Claim 11 (line 10), "c. displaying" should be changed to --c/ displaying--;

Claim 12 (line 3), "by use of" should be changed to --by using of--;

Claim 14 (lines 1-2), claim 15 (lines 1-5), claim 16 (lines 1-5), "said processing means" should be changed to --said processing--;

Claims 2-10 are objected as being dependent on claim 1.

Claims 12-19 are objected as being dependent on claim 11.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Merrill (US 7,164,444).

Regarding claim 1, Merrill discloses a multispectral imaging camera (digital camera 40, figure 5) comprising:

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- a/ a lens for transmitting an image (optical system 52, figure 5, column 6, lines 18-35);
- b/ a means for focusing said image (optical system 52, figure 5, column 6, lines 18-35),
said means operably affixed to said lens;
- c/ an optical sensor (image sensor chip 42, figure 5, column 6, lines 18-67) to receive said
image and separate said image into a plurality of bandwidth frequencies forming at least two data
sets, each of said data sets comprising a plurality of linear data and said separated images having
spatial and temporal registration with each other;
- d/ a processing means (included in digital camera 40 for processing image data from
image sensor chip 42, figure 5, column 18-67) for receiving said data sets and manipulating said
linear data within said data sets producing modified data sets; and
- e/ a monitor (display chip 56, figure 5, column 6, lines 40-50) for displaying said
modified data sets.

Regarding claim 3, Merrill discloses a means for controlling the amount of light transmitted through said lens (an iris is included in digital camera 40 for controlling the amount of light transmitted through said lens).

Regarding claim 4, Merrill discloses wherein said optical sensor is a vertically stacked photodiode array based on the spectral absorption characteristics of silicon (three color detector regions 14, 16, 18, figure 1, column 3, lines 16-48).

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Regarding claim 5, Merrill discloses wherein said bandwidth frequencies are selected from frequencies not less than 400 nanometers (since the three color detectors are red, blue green color, the blue light, green light, and red light having wavelength between 400nm – 700nm, the bandwidth frequencies are selected from frequencies not less than 400 nanometers).

Regarding claim 6, Merrill discloses wherein said bandwidth frequencies are selected from frequencies not more than 700 nanometers (since the three color detectors are red, blue green color, the blue light, green light, and red light having wavelength between 400nm – 700nm, the bandwidth frequencies are selected from frequencies not more than 700 nanometers).

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11, 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Silva et al. (US 6,304,664).

Regarding claim 11, Silva et al. discloses a method for observing an object under the surface of water comprising the steps of:

a/ separating an image into a plurality of bandwidth frequencies forming at least two data sets said separated images having spatial and temporal registration with each other (figures 2-3, column 3, lines 6-67);

b/ processing said image by manipulating said at least two data sets to enhance visualization of said object (column 4, line 60 - column 5, 25); and

c/ displaying said manipulated data sets thereby observing said object under the surface of water (display device 538, figure 5, column 37-67).

Regarding claim 15, Silva et al. discloses wherein said processing means further manipulates said at least two data sets by performing an image integration function (column 1, lines 35-45).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill (US 7,164,444) in view of Mohan et al. (US 6,005,959).

Regarding claim 2, Merrill fails to specifically disclose a polarizing filter affixed on said lens polarizing said image. However, Mohan et al. teaches a polarizing filter 420 is incorporated with the lens of camera 120 (figure 4, column 8, lines 14-38). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the

device in Merrill by the teaching of Mohan et al. in order to reduce glare in images (column 8, lines 30-35).

9. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill (US 7,164,444) in view of Mann (US 6,838, 651).

Regarding claims 7, 8, Merrill fails to specifically disclose wherein said processing means manipulates said data sets by performing at least a fixed pattern correction and a line differencing algorithm. However, Mann teaches an error compensation circuit 118 is used to correct fixed pattern noise for each color channel (column 5, lines 1-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Merrill by the teaching of Mann in order to correct fixed pattern noise for each color channel (column 5, lines 1-12).

Regarding claim 9, Merrill discloses wherein said processing means further manipulates said data sets by performing an image integration function (column 4, lines 4-45).

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill (US 7,164,444) in view of Mann (US 6,838, 651) further in view of Fang et al. (US 5,771,318).

Regarding claim 10, Merrill and Mann fail to disclose wherein said processing means further manipulates said data sets by performing a demeaning filter function. However, Fang et al. teaches an adaptive edge-preserving smoothing filter to reduce noise levels while preserving fine structures in data (column 3, lines 10-35; column 2, lines 9-36). Therefore, it would have

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been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Merrill and Mann by the teaching of Fang et al. in order to reduce noise level in data (column 3, lines 10-15).

11. Claims 12, 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silva et al. (US 6,304,664) in view of Merrill (US 7,164,444).

Regarding claim 12, Silva et al. fails to disclose wherein said separating of said image into a plurality of bandwidth frequencies is by use of a vertically stacked photodiode array sensor based on the spectral absorption characteristics of silicon. However, Merrill teaches digital camera 40 incorporating an array of vertical color filter detector groups 10 as shown in figure 1 (column 6, lines 18-30; column 3, lines 15-48). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Silva et al. by the teaching of Merrill in order to promote ease of design and manufacturing of active pixel sensor circuit (column 4, lines 50-55).

Regarding claim 17, Merrill discloses wherein said bandwidth frequencies are selected from frequencies not less than 400 nanometers (since the three color detectors are red, blue green color, the blue light, green light, and red light having wavelength between 400nm – 700nm, the bandwidth frequencies are selected from frequencies not less than 400 nanometers).

Regarding claim 18, Merrill discloses wherein said bandwidth frequencies are selected from frequencies not more than 700 nanometers (since the three color detectors are red, blue

green color, the blue light, green light, and red light having wavelength between 400nm – 700nm, the bandwidth frequencies are selected from frequencies not more than 700 nanometers).

12. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silva et al. (US 6,304,664) and Merrill (US 7,164,444) further in view of Mann (US 6,838, 651).

Regarding claims 13-14, Silva et al. and Merrill fail to disclose wherein said processing manipulates said at least two data sets by performing at least a fixed pattern correction and a line- differencing algorithm. However, Mann teaches an error compensation circuit 118 is used to correct fixed pattern noise for each color channel (column 5, lines 1-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Silva et al. and Merrill by the teaching of Mann in order to correct fixed pattern noise for each color channel (column 5, lines 1-12).

13. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silva et al. (US 6,304,664) in view of Fang et al. (US 5,771,318).

Regarding claim 16, Silva et al. fails to disclose wherein said processing means further manipulates said data sets by performing a demeaning filter function. However, Fang et al. teaches an adaptive edge-preserving smoothing filter to reduce noise levels while preserving fine structures in data (column 3, lines 10-35; column 2, lines 9-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Silva et al. by the teaching of Fang et al. in order to reduce noise level in data (column 3, lines 10-15).

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14. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silva et al. (US 6,304,664) in view of Mohan et al. (US 6,005,959).

Regarding claim 19, Silva et al. fails to specifically disclose a polarizing filter affixed on said lens polarizing said image. However, Mohan et al. teaches a polarizing filter 420 is incorporated with the lens of camera 120 (figure 4, column 8, lines 14-38). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Silva et al. by the teaching of Mohan et al. in order to reduce glare in images (column 8, lines 30-35).

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID L. OMETZ can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LN
11/08/07



LUONG T. NGUYEN
PATENT EXAMINER